

REMARKS

The claims have not been amended in this response.

In the Final Office Action date January 31, 2006, the pending claims were rejected on the basis of Ogawa in combination with Melton.

The outstanding rejection utilizes Ogawa as the primary reference. Ogawa is directed at the fabrication of a lead frame having a support member (2, 8) that is secured to the bottom surface of the lead frame 1. The support member serves as a support for the die 4 **when the lead frame is eventually used in a package**. In the embodiment illustrated in Figs. 1 and 3, the support member is resin film or plate 2 (e.g. polyimide). In the embodiment illustrated in Fig. 4, the support is a metal plate 8.

As currently presented independent claim 1 requires, inter alia:

mounting the lead frame and an integrated circuit die onto a strip of adhesive tape such that a lower surface of the die contacts the adhesive tape and the die is located in the central opening, and the lower surface of the lead frame also contacts the adhesive tape;

\* \* \*

forming a plastic casing over an upper surface of the die and the upper surface of the lead frame wherein the plastic casing comes into contact with the adhesive tape such that a lower surface of the plastic casing is substantially coplanar with the lower surfaces of the lead frame and the die; and

**removing the adhesive tape after forming the plastic casing to expose the lower surfaces of the die and the lead frame, whereby exposed portions of the lead frame form the only externally accessible I/O contacts for the package and plastic material fills at least portions of gaps between adjacent leads, such that the lower surface of the package is substantially coplanar and includes exposed portions of the plastic casing, the lead frame and the die.**

Although the scope and language of independent claim 7 differs from claim 1, it also has similar requirements.

The outstanding office action acknowledges that Ogawa does not disclose the step of forming a plastic casing over the die and lead frame in a manner that leaves the lower surface of the lead frame exposed and substantially coplanar with the lower surface of the plastic casing. The office action then relies on Melton for the propositions that it would be obvious to modify Ogawa to: (a) form a plastic casing over the lead frame in a manner that leaves the bottom surface of the lead frame exposed; and (b) remove the resin film 2 taught by Ogawa.

It is respectfully submitted that those skilled in the art at the time of the present invention would not have been motivated by any reasonable combination of the Ogawa and Melton references to make the combination proposed by the outstanding rejection (or the specific combinations set forth in independent claims 1 and 7). As has been argued extensively in earlier responses, the resin member 2 disclosed by Ogawa is very clearly intended to be a permanent structure and its removal would completely defeat the purpose of Ogawa reference. It is well settled that in order to support a prima facie case of obviousness, there must be some suggestion or motivation (either in the references themselves or in the knowledge generally available to one of ordinary skill in the art) to modify a reference or to combine the teaching of two (or more) references. See, MPEP §2143. It is also well established that if a proposed modification would render the prior art being modified unsatisfactory for its intended purpose, then, as a matter of law, there can not be a suggestion or motivation to make the proposed modification. MPEP §2143.01(V). In view of the fact that removing the resin member would completely defeat the purpose of Ogawa, it is respectfully submitted that nothing in Melton would motivate those skilled in the art to make the combination asserted in the outstanding rejection. Accordingly, it is respectfully submitted that a prima facie case of obviousness has not been made and that the outstanding rejections should be withdrawn for at least this reason.

It is noted that the outstanding rejection refers to the resin member 2 as an "adhesive tape." As such, one aspect of the rejection appears to be premised on the assumption that Ogawa teaches the application of an adhesive tape to the back surface of a lead frame and Melton teaches removing such a tape.<sup>1</sup> However, it is respectfully submitted that the resin member (which may be a film) is not a conventional "adhesive tape". It is believed that an adhesive tape is generally considered a tape that has an adhesive that is lined on one side with an adhesive material. See, e.g., the following on-line dictionary definition of the term adhesive tape taken from A9.com.

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Dictionary

adhesive tape  
*n.*

A tape lined on one side with an adhesive.

The American Heritage® Dictionary of the English Language, Fourth Edition Copyright © 2004, 2000 by Houghton Mifflin Company. Published by Houghton Mifflin Company. All rights reserved.

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<sup>1</sup> S Melton discloses the use of a molding support 38 (which constitutes "a flexible polyimide tape having an adhesive coating for temporarily securing integrated circuit die 12 to lead frame 22 during processing" – See Col. 2, lines 55-59.

In contrast, the resin member 2 disclosed by Oogawa is secured to the lead frame and the die by a separate "resin type adhesive agent 3" that is applied in a separate operation to one of the surfaces. That is, the resin type adhesive agent 3 does not appear to be an integral part of or a lining for the resin member 2 as would be the case with an adhesive tape. Thus, it is believed that it is a mischaracterization to refer to the resin member as an adhesive tape. Normally, the undersigned would not consider this distinction important in responding to the office action because it is believed that the critical factor is that the resin member 2 disclosed by Oogawa is intended to be permanently attached to the lead frame and die. However, the distinction is pointed out because it is believed that such a mischaracterization may have been a factor used to help justify the combination of Oogawa and Melton which as previously discussed is respectfully submitted to be inappropriate.

The outstanding rejection also appears to take the position that those of ordinary skill in the art would be motivated by Melton to form a package having contacts exposed on the bottom surface of the package using the lead frame of Oogawa wherein the **"exposed portions of the lead frame form the only externally accessible I/O contacts for the package."** This assertion is respectfully traversed. Initially, the outstanding rejection acknowledges that Oogawa does not teach any package arrangements in which lower surfaces of the lead frame are exposed on the bottom surface of a package. Melton does describe such a structure (i.e., the bottom surfaces of the leads 16 in lead frame 22 are exposed on a surface of the package). However, Melton does not appear to use those exposed leads as the external electrical contacts for the package. Rather, as discussed in earlier responses, Melton described a rather complex process for attaching metallic bumps 20 to the upper (i.e., not exposed) surfaces of the leads. The metal balls extend through the plastic casing such that they are exposed on the opposite surface of the package. Then, these balls (and based on the disclosure it appears that only these ball) are used as the electrical contacts for the package. Thus, neither Oogawa or Melton suggest using portions of a lead frame that are exposed on the bottom surface of a package as the electrically accessible I/O contacts for the package and they certainly don't suggest using such exposed contacts as the only I/O contacts for the package as specifically required by independent claims 1 and 7. Accordingly, it is respectfully submitted that the outstanding rejection does not establish a prima facie case of obviousness for at least this reason as well.

#### **The Dependent Claims**

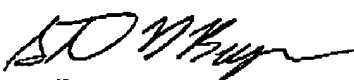
Claims 2 and 4- 6 each depend either directly or indirectly from independent claim 1 and are therefore respectfully submitted to be patentable over the art of record for at least the reasons set forth above with respect to claim 1. Additionally, some of these dependent claims require additional elements that when considered in the context of the claimed arrangements further patentably distinguish the art of record.

Claims 8 – 10 each depend either directly or indirectly from independent claim 7 and are therefore respectfully submitted to be patentable over the art of record for at least the reasons set forth above with respect to claim 1 and 7 discussed above. Additionally, these dependent claims require additional elements that when considered in the context of the claimed arrangements further patentably distinguish the art of record.

#### Conclusion

In view of the foregoing, it is respectfully submitted that all pending claims are patentable over the art of record and that this case is in condition for allowance. Should the Examiner have any remaining concerns regarding the present application, he is encouraged to contact the undersigned at the telephone number set out below.

Respectfully submitted,  
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